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NOTES AND NEWS.

RATIONAL FEAR OF THUNDER AND LIGHTNING.

The suggestive *questionnaire*, Study of Fears, in a late number of this review (Vol. VIII, No. 2), points out "the fact that this fear leads all the others, and as that yet so small a fraction of one per cent. of deaths are by lightning, show that, as yet, our correspondents have not adjusted their scale of fear to that of danger. Perhaps nowhere is the power of noise to control feeling and to excite imagery so well seen" (p. 203). Is it not, then, most remarkable that the most prominent of all fears is the most baseless? And how shall evolutionary psychology reconcile this fact with its prime assumption that mental functions originated in and are developed through utility? Even if it be granted that mentality often develops, especially in earlier life, against utility, it is hard to see how such a prominent yet useless and harmful fear escaped being eliminated by natural selection. The biologist who would find a correspondingly prominent bodily function and organ would unhesitatingly pronounce that it must have grown up in the struggle for existence, or what is implied therein. Does it not seem unlikely that mentality in such a form as fear of thunder and lightning is a mere morbid phenomenon, a mere perversion, especially when we note that civilization and complete maturity do not erase it? Indeed, among savages, as Lumboltz noted among the Australians, the electric discharges merely excite to joyous dancing and gesticulation, just as is often noted in children. Further, many beasts, as particularly the *felidæ*, the puma, lion, etc., are joyfully excited by thunder-storms, whereas the civilized dog is apt to slink under the bed. The bang and glare are gratefully stimulating to crude sensation, and as the direful effects of lightning are so rare in experience, it is difficult to understand how the great fear of thunder and lightning arose and developed under natural evolution. We know how quickly wild animals adjust themselves to the roar of the railway train and glare of the headlight; and it would seem that thunder and lightning is an analogous case, that the phenomena, as such, would come to be taken as a matter of course, and particularly by the more highly developed. That the fact is directly opposite to this biological deduction, certainly suggests an interesting problem. And, as has been implied in our remarks hitherto, menace, or shock to eye or ear, is far from accounting for this phenomenon.

As perhaps throwing some light on this subject I will relate an experience of my own. One afternoon last summer when the sky was slightly overcast, but neither thunder nor lightning apparent, I was walking on the street, when I was suddenly arrested by a peculiar sensation, as if some subtle atmospheric influence was swaying through me. As this increased, a strange and obscure fear took possession of me, and for some moments I was rooted to the spot, and deeply oppressed by a peculiar dread. The experience lasted, in all, for perhaps a minute, and during the time I was perfectly self-possessed, and my aroused scientific curiosity was closely observant of the situation and emotion and searching for the cause. I

knew at once that it was not a mere subjective phenomenon, but the objective source was entirely unexplained till I afterward learned that at the exact moment of my singular experience a most violent magnetic storm had swept over the country. That this pulsed through me, bringing a great oppression and fear, is the only explanation I can give. And I remarked that the oppression and fear were not merely at the sensation, but were mainly involved in it; that is, the nervous disturbance was directly correlated with the depression and fear. Now, my electrical sensitiveness is very great, and I remember on one occasion to have felt electrical disturbance from a small storm passing to one side at the distance of more than a mile from me, and to which I was perfectly regardless at the moment; and I am disposed to believe that the uncontrollable irrational fear which often possesses me during thunder-storms is largely and directly based on nervous disturbance produced by the violent electrical changes. This idea is strengthened when I remember having gone through an extremely bad thunder-storm with almost no fear merely because I had taken refuge in a large church, where, I take it, the mass of dry air acted as an insulator. While I knew churches were quite liable to be struck by lightning, yet I was little disturbed. The suggestion that I have then to make is this, that certain types of highly organized nervous systems are very responsive to electrical changes, these producing directly great mental disturbance involving fear. I conceive that another type of nervous organization might only have felt exhilaration and joy in the case of the magnetic storm I first mentioned, another might have been angry, another have been quite unresponsive. The changing phases of electrical tension in the air, not only in case of storm, but the ever changing electrification, daily and seasonal, undoubtedly stimulates nerve activities in varying ways according to temperament and idiosyncrasy. A highly nervous gentleman, whom I told that for myself railway travel shook me up pleasantly, replied that for himself it shook him down unpleasantly; which illustrates how oppositely the same stimulus may work—upon one for exhilaration, upon another for depression. On the whole, then, I believe that fear of thunder and lightning is, in some wise, a necessary incident of a certain nervous organization, and has its immediate explanation by physiology rather than psychology.

As further investigation of the subject I would suggest that a *questionnaire* on the experience of persons in the rare magnetic storms might be useful in pointing out matter for research. The experience I had last summer was entirely unique for me, but like experiences may be common. Again, direct experiment in changing the form and tension of atmospheric electricity might easily be made upon persons, who, however, should be taken unawares and unexpected. For instance, the nervous invalid mentioned on p. 201 of the recent article on Fear in this review, might, unknown to herself, be variously insulated during storms, and the nervous and mental effects noted. I urge particularly that the person who is experimented on should be kept in entire ignorance of any experiment, for nothing vitiates and complicates psychological experiment more than expectancy, often complex by the agent. As a practical matter I may mention that I find that during a thunder-storm a slow pacing back and forth, breathing very deeply and slowly, will greatly relieve nervous and mental agitation, and I think that a subterranean chamber would give perfect relief.

HIRAM M. STANLEY,
Lake Forest, Ill.

In the February number of the *Atlantic Monthly* Professor Münsterberg publishes a sharp criticism of Dr. Scripture's recent book, "The New Psychology." Dr. Scripture is an extremist upon the quantitative side in experimental psychology. The whole of mental life must be brought, whether it will or no, under the physical categories of time, space and energy. And if the psychological facts are at all discomposed by the arrangement, finding themselves in strange company and not knowing where to look for their friends, why, so much the worse for the facts; they must get used to it. Professor Münsterberg is equally extreme upon the qualitative side; you cannot now, he says, and you never will measure a mental process. The reference to physical categories depends upon a quibble; you go to a book for the time-relations of consciousness, and what you find discussed is the consciousness of time-relations, and so on.

It is not profitable to interfere in discussions of this sort. They are incidental to the present status of the science of experimental psychology, and the two combatants in the case before us are fully able to take care of themselves. Dr. Scripture may, if he will, fall back upon Professor Cattell's paper on "Mental Measurement," published in the *Philosophical Review* some five years ago; and Professor Münsterberg may feel his position strengthened by what Dr. Wolff has recently said in the *Zeitschrift* about the psychological experiment. *Magna est veritas et*—ultimately—*prævalebit*. There is, however, one point which the *Atlantic Monthly* article includes in the issue, but which seems to be really separate from it, that may be treated as a matter for itself, without intrusion into the controversy: the question of what experimental psychology may be expected to do for the teacher. Professor Münsterberg thinks that it will, as it can, do nothing. We cannot share this opinion, for the following reasons.

Every mental process may be looked at in two ways, as existence or as function. Whether we can measure sensations, regarded as existences, has long been debated in experimental psychology; and the outcome of the debate is still to be expected. Of course a pressure sensation called forth by a 2-lb. weight is not analyzable into two pressure sensations of 1 lb. each; and the visual perception of a blood orange is not a fusion of the visual perceptions of three tangerines. The question is only whether such considerations are the alpha and omega of existential measurement. But while we may, for certain psychological ends, find it convenient to look at mental processes as existences, we *must* look at them as functions; and this, whether we are 'parallelists' or 'interactionists.' In the former case we have at least to say that the brains which now throw off these and these processes, as the correlate of their physiological functioning, are the brains that have survived in the struggle for existence; mental processes are thus at least indicative of organic function. In the latter we can find no reason for the existence of mental processes, save that they have themselves proved serviceable for organic survival in the course of evolution. The conception of mind as function is thus forced upon us. But function can be measured. If I can just see a black dot on a white ground at a distance of one foot, while my friend still just sees it at a distance of three, then his brightness sensitivity is three times as great as mine. If I remember two-thirds of a mass of visual material, presented under standard conditions, and my friend remembers five-sixteenths, then our visual memories stand to each other in fidelity of reproduction as

32 to 15. If, using all my partial memories, I can recall five arguments of a given total, while my friend remembers eight, then the practical value of his memory is one and three-fifths as great as that of mine. All these cases are cases of measurement; but all are cases of the measurement of mental processes regarded as functions of the organism, not as mere existences. And it is here, in our belief, that the psychological laboratory begins without any question to be of service to the teacher. There is no doubt that we can measure mental function. The instances above given are crude and insufficiently qualified; but their principle is sound. We can measure span and fidelity of memory, quickness and accuracy of apprehension, range and direction of imagination, capacity of sustained attention; we can measure inventiveness, adaptiveness, observing power, cool-headedness, suggestibility, etc., etc. Measurements of all these functions may not have yet been made; they may not be the special functions which are of the chiefest interest just now to experimental psychologists. But such measurements can be made; and, when made, are of primary importance to the teacher.

E. B. T.

Professor Sternberg calls attention in the *Centralblatt für Physiologie* to an earlier article ("Zur Physiologie und Pathologie des Lesens") by Dr. Goldscheider and R. F. Müller, *Zeitschrift für klinische Medicine*, Vol. XXIII, p. 131, that I had not cited in a paper on "Apperception," published in this JOURNAL last April. The *Zeitschrift* was not taken at Cornell, and, although I had seen the title in the bibliographies, made only a half-hearted attempt to obtain it, as neither the subject nor the place of publication indicated that it had a direct bearing upon my problem. The incident is a warning not to overlook anything that promises to have even an indirect connection with the question in hand, provided that question be psychological.

Goldscheider and Müller's investigation grew out of the controversy in the literature of aphasia, as to whether reading was by letters or by word form. His experiments began by determining the number of simple lines that could be seen with an exposure of .01 sec. and traced the increasing number as the elements were arranged in patterns, were formed into letters, and the letters were united into words, and the words into familiar sentences. The influence of meaning was studied by omitting or changing certain letters and noting the way in which the word was completed. In brief, the results showed that reading was both by letters and by word form; that certain letters were of more importance than others, and that memory images and association play an important part in perception. My experiments agree with his in every point.

W. B. PILLSBURY.

THE SIMPLE REACTION.

The following passage from the third edition of Wundt's *Vorlesungen* (p. 316, n.) is of interest in the light of recent discussions of the simple reaction:

"In some [recent] investigations upon reaction-times, the expressions 'sensorial' and 'muscular reaction' have evidently been employed in a sense entirely different from that in which I use them here. In certain cases directions have been given to the sub-

ject which differ in essential points from those that condition the complete and shortened forms of reaction; in others, the choice of the reaction form has been left to his own judgment. This must be the reason that some observers have been unable to find any difference at all between the sensorial and the muscular reaction, while others have recorded differences in the results obtained from different subjects — the sensorial reaction proving to be longer than the muscular, or the muscular longer than the sensorial, or the two of equal length, according to the individual under investigation. At all events, the terms 'sensorial' and 'muscular' reaction have been taken here in a different meaning from that assigned them in the text [p. 316]; and it is further probable that the subjects themselves have varied in their understanding of the directions given. No general statement can be made, however, as to the interpretation of experiments of this kind; the printed accounts of them are too defective. Nothing is said, in particular, of any observance of the criteria of the complete and shortened forms laid down just now [pp. 313 ff.], of attention to the erroneous reactions, the premature reactions, the distracting effect of outside stimuli, etc. Indeed, there are some papers which do not tell us even of the mean variation of the separate observations. Now it is quite possible that there exist forms of reaction over and above the complete or 'sensorial' and the shortened or 'muscular' forms, and that some of these may possess psychological interest [*cf.* p. 313]. But it seems to me that we have as yet no experiments that we can employ for a settlement of this question. Nor do I think that the observations which we have can sustain the conclusion that different individuals show 'typical' differences, which determine the duration and character of their reactions. For it is not improbable that the results which these differences are made to account for are due partly to differences in interpretation of the directions given to the subjects, and partly to habits of experiment, accidentally established and psychologically irrelevant."

PORTRAITS.

I have recently had large, almost life-size platinotypes of Wundt and Fechner made for the Cornell Laboratory by Herr Carl Bel-lach, Gellertstrasse, Leipzig. As the pictures are very good and not expensive, it seems not worth while to call attention to them here. The portrait of Wundt costs mk. 40, that of Fechner, mk. 60. The total expense of the pictures, delivered at the laboratory, was mk.107 and \$1.50. E. B. T.

The first general meeting of the Childhood Society of Great Britain, founded in 1896, was held in London, Jan. 12, Sir Douglas Gal-ton, the chairman of the society, presiding.

The Open Court Publishing Co., Chicago, Ill., offer a series of thirty-four portraits of psychologists, suitable for framing, at the very moderate price of \$5.00 (better paper \$7.00). Among the psychologists upon their list are Cabanis, Maine de Biran, Beneke, G. E. Müller, E. H. Weber, Fechner, Helmholtz, Hering, Aubert, Mach, Stumpf, Wernicke, Exner, Munk, Steinthal, Brentano, Paul Janet, Ribot, Taine, Fouillée, Binet, Bain, Romanes, L. L. Morgan, Bastian, James, Ward, Sully, Stanley Hall, Ladd, Wundt. It may be hoped that Herbart and Lotze will be added.

Dr. W. H. R. Rivers, lecturer in experimental psychology at the University of Cambridge and at University College, London, will accompany the Cambridge expedition to Torres Straits and Borneo. In conjunction with Drs. W. McDougall and C. I. Myers, Dr. Rivers will "test the senses and sensibility of the natives, as far as it will be possible under local conditions, and make whatever observations he can on the mental processes of the natives. Besides the ordinary instruments for anthropometry there will be a small, carefully selected collection of apparatus for experimental psychology. Two mechanical phonographs will be taken to record the native songs, music and languages." Opportunity will thus be given for "studying comparative experimental psychology in the field." The expedition starts at the beginning of March, and returns in the early summer of 1899.

The 1898 meeting of the American Psychological Association will be held in New York. Professor H. Münsterberg is president, and Dr. L. Farrand secretary for the current year.

BOOKS RECEIVED.

- ARRÉAT, LUCIEN. *Les croyances de demain*. F. Alcan, Paris, 1898, pp. 178. Price, frs. 2.50.
- BERTRAND, ALEXIS. *L'Enseignement intégral*. F. Alcan, Paris, 1898, pp. 313. Price, frs. 5.
- CHAPIN, JOHN B. *A Compendium of Insanity*. (Illustrated.) W. B. Saunders, Philadelphia, 1898, pp. 234. Price, \$1.25.
- BINET, A., ET HENRI, V. *La fatigue intellectuelle*. Avec 90 figures et 3 planches hors texte. Schleicher Frères, Editeurs, Paris, 1898, pp. 338.
- LE DANTEC, F. *Evolution individuelle et hérédité. Theorie de la variation quantitative*. F. Alcan, Paris, 1898, pp. 308. Price, frs. 6.
- DUGAS, L. *La timidité. Etude psychologique et morale*. F. Alcan, Paris, 1898, pp. 167. Price, frs. 2.50.
- ISTITUTO PSICHIATRICO DI REGGIO-ENIDIA. *Lavori originali del laboratorio di psicologia sperimentale (1896-97)*. Tipografia di Stefano Calderini e Figlio, Reggio-Enidia, 1897. Anno I, Volume I, pp. irregular.
- JANET, PIERRE. *Néuroses et idées fixes*. 1er vol. *Etudes expérimentales sur les troubles de la volonté, de l'attention, de la mémoire, sur les émotions, les idées obsédantes et leur traitement (travaux du laboratoire de psychologie de la clinique à la Salpêtrière. Première série)*. F. Alcan, Paris, 1898, pp. 492. Price, frs. 12.
- LIPPS, TH. *Raumaesthetik und geometrisch-optische Täuschungen*. J. A. Barth, 1897. Price, mk. 12.00.
- PICK, LEOPOLD. *Die vierte Dimension*. Arwed Strauch, Leipzig, 1898, pp. 46. Mk. 1.00.
- SCRIPTURE, E. W. (Editor.) *Studies from the Yale Psychological Laboratory*. Vol. IV, 1896, pp. 141. Yale Psy. Lab., New Haven, Conn. Price, \$1.
- SIDIS, BORIS. *The Psychology of Suggestion. A research into the subconscious nature of man and society. With an introduction by Professor William James of Harvard University*. D. Appleton & Co., N. Y., 1898, pp. 386. Price, \$1.75.
- TITCHENER, EDWARD BRADFORD. *A Primer of Psychology*. The Macmillan Co., N. Y., 1898, pp. 314. Price, \$1.50.

- WRESCHNER, ARTHUR. Methodologische Beiträge zu Psychophysischen Messungen (auf experimenteller Grundlage). Schriften der Gesells. f. Psychologische Forschung, Heft 2. (iii Sammlung.) Johann Ambrosius Barth, Leipzig, 1898, pp. 238. Price, mk. 7.
- WUNDT, WILHELM. Die Geometrisch-Optischen Täuschungen. Des XXIV Bandes der Abhandlungen der math.-phys. Classe der Königl. Sachs.-Gesells. der Wiss. No. II. Mit 65 Textfiguren. B. G. Teubner, Leipzig, 1898, pp. 178. Price, mk. 5.